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ABSTRACT

This paper describes the process of creating an online course at the Northwestern Technical Institute (Georgia) using locally produced lessons, supplemental text, threaded discussion groups, online examinations, and student access to a transparent third party URL (Uniform Resource Locator). The course, developed for the Microsoft Office User Specialist Certificate program, takes advantage of transparent access to a third party software vendor to provide software demonstrations for online students. The following phases of course development are described: (1) planning, including identification of considerations and design decisions to help guide the project; (2) design, including organization of competencies that the student will be required to master and creation of various course components (e.g., units of study, learning resources, simulations, production labs, assessment); (3) production, including solving problems related to demonstrating procedures/skills over the World Wide Web, simulating classroom interaction, communicating with students, and dealing with testing/administrative issues; (4) trial; (5) evaluation; and (6) implementation, including lessons learned. A syllabus format for Web-based courses is appended. (Contains 41 references.) (Author/MES)

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Taking It Online: A Bootstraps Approach

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Abstract: Describes the process of creating an online course using locally produced lessons, supplemental text, threaded discussion groups, online examinations, and student access to a transparent third party URL. The Microsoft Office User Specialist Certificate takes advantage of transparent access to a third party software vendor to provide software demonstrations for online students. The presentation will present an overview of the development process form conception to delivery and will include an online demonstration of the course.
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Taking It Online: A Bootstraps Approach

Introduction

In 1454 Johann Gutenberg printed what is widely considered to be the first book using movable type. The Gutenberg Bible, printed at Mainz, Germany, had 42 lines per page. This event precipitated an enormous publishing explosion allowing information to be distributed to the masses. A similar information explosion is happening today via the World Wide Web and Internet. Oddly enough we are suffering some of the same problems that the publishing industry experienced during its formative years. It took a number of years for example for things we take for granted today to become standardized. Practices such as page numbering, including a table of contents in the document, creating an index, and including title pages were all left to the publisher's discretion. Today those involved in publishing on the web find themselves in a similar situation. There is precious little in the way of standardization regarding material prepared for delivery on the web. Materials prepared for instructional purposes are not exempt from this lack of standardization either. However, this problem is being resolved much more quickly today than it was in Gutenberg's time. There is already much more standardization with regard to online publishing than there was just two years ago. It still seems to be the publisher's decision, however. In academic circles this responsibility falls by default to the college or university or maybe even a department in the university.

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In November 1997, with the support of the administration in the form of resources and time, several members of the faculty of Northwestern Technical Institute made a conscious decision and commitment to develop courses of study for delivery over the World Wide Web. However, even with significant

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preplanning, to paraphrase another group of early explorers, "we were blindly going where no one had gone before." Choosing to create an online course with little or no previous experience posed a daunting challenge for the team investigating what we then called, alternative instructional delivery. At the outset the Northwestern team consisted of 10 members. Today three of the original team members have persisted and have courses currently on the web. During that same period of time, the college also became a founding member of the Georgia Virtual Technical Institute, a consortium of institutions offering web based courses, but that is another story.

This paper provides an overview of one instructor's journey to the WEB. Taking a course online requires a significant expenditure of effort from several sources: the faculty member designing the course, the technical support staff who create and manage the network, and the administration who support the project with the allowance of time and resources.

Faculty training was an important issue early on. Even though the developer, Ms. Ginger Sabine, was a computer information science instructor, creating a course for the web was a new and often frustrating experience. The learning curve included developing a mastery of new software, working through instructional strategy issues, many of which were discovered as a part of the instructional design process; and discovering new ways to demonstrate skills to a remote audience. In hindsight and in the best of all possible worlds, additional time and training in the use of software products would have been very beneficial to all involved. In fact, to ensure success and minimize attrition early education and training is essential.

What we will describe in this paper is the route taken by Ms. Sabine at Northwestern from concept to product. We will make every effort to point out failures or what we would do differently and likewise will describe the "good" decisions that were made.

The first attempt at going online consisted of the following stages:

I. The Planning Phase
II. The Design Phase
III. The Production/Trial Phase
IV. The Evaluation Phase
V. The Implementation Phase

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Planning Phase

In the planning phase, Ms. Sabine as a member of a design team of faculty and staff, set about the task of creating a framework around which web-based courses could be developed. Team members involved in the design process identified the following considerations to help guide the project:

- Alternative delivery courses should provide for asynchronous instructional delivery.
- Alternative delivery courses should be available on demand
- Alternative delivery courses should include e-mail in the communication protocol
- Alternative delivery courses should provide for the participation in labs from remote sites.
- Alternative delivery courses should allow for simulation.
- Alternative delivery courses should include all aspects of the course of study or supplements to the course of study that are made available to the student in a traditional class.

In addition to the considerations listed above, the design team agreed upon the following design decisions.

This was based upon a review of the available literature on the design of web based classes.

1. Each online course would contain the same level of academic rigor as a traditional course.
2. A common format-i.e., "look and feel"- would be developed and used by all developers
3. A common software application would be chosen and used by all developers.
4. Course development would be modular.
5. Each course would be offered online to an in house class in a pilot phase before publishing the course to the web.
6. Each online course would contain the same or at least very similar learning activities.
7. The syllabus format would be as similar to the traditional course as possible. (See syllabus format for web classes in Appendix A)

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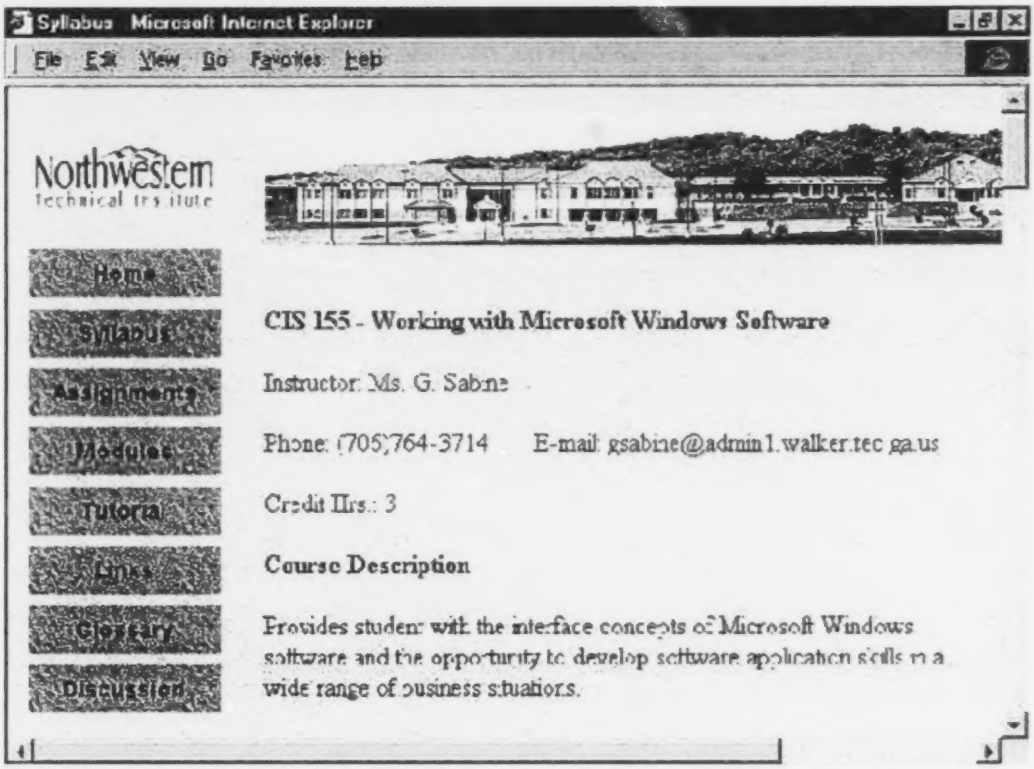
Design Phase

The course developed by Sabine was an introductory course to the Windows operating system, the first course developed for the Microsoft Office User Specialist program, one of two programs Northwestern offers in partnership with Microsoft. As is typical of most introductory computer courses taught in the traditional manner, this course consisted of four major components: lecture, practice labs, assignments, and exams.

Web-based courses, it was learned, are very much a sum of many parts. Of these parts there are at least two organizational decisions that a developer must make when creating a course for the web. One decision deals with the treatment of educational outcomes or the organization of competencies that the student will be required to learn or master. The second decision revolves around the creation of the various course components such as units of study, learning resources, simulations, production labs, assessment, etc. (See figure A.)

Figure A



Sabine chose to deal with the course competency areas in the form of instructional modules. The competencies were the same as those taught in the traditional class. Modules were arranged to match the academic calendar-that is, 10 weeks. Each module consisted of a self-contained instructional package including goals of the module, specific learning objectives, various types of learning resources, and assessment. By design, students were forced to satisfactorily complete a module before moving on to the next. Course components included in the Sabine design framework are listed below.

The components of this course differed from those of other developers but each developer did adhere to a mutually agreed upon course template, course design format, and page format. Typically, however, all initial web courses developed consisted of units of study or modules, both on-line and off-line resources, learning activities, and examinations. The specific components of this course are described below.

Home - This button brings you back to this page.

Syllabus - This page contains a copy of the course syllabus.

- Modules - This is the backbone of the course. CIS 155 is broken down into 10 modules each containing a number of objectives. The student must successfully complete one module to progress to the next. At the end of each objective, a button exists which will link the student to the next objective. If at any time the students becomes lost, they can click the Module button on the side of every page and it will bring them back to the beginning. Upon completion of each module the student will be required to complete a test. Students who do not successfully complete the test may trace back through the module until they are able to successfully complete that module's test.
- Assignments - This page contains a condensed list of all assignments in this course.

Tutorial - This page explains how to log-on to the tutorial software.

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- Glossary - This page contains the glossary search engine. This glossary will search every page for instances of words typed in the text box. The glossary will also display the words of the glossary by first letter of the word. The student chooses the letter that the word starts with, and the glossary will link to the appropriate page.
- Discussion – This course component includes a discussion group where students can post articles about problems they encounter or tips and resources that other class members might want to know about.

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The Production Phase

After the project design was agreed upon, the instructor began the process of recreating a course of study that could be delivered, with assessment of competencies mastered over the WEB. Faculty were provided orientation and instruction in the use of web publishing software and course management software. Their task then was to repackage the content typically presented in a traditional format so that it would fit into this new delivery vehicle. A number of problems surfaced, which were quickly followed by unique and innovative solutions.

The problem of how to demonstrate a procedure, skill, or technique over the web was an issue that had to be contended with early on. In the process of developing a course in the Windows operating system, an arrangement was made with a third party vendor so that NTI students could have transparent access to that vendor's URL. This particular vendor sold demonstrations of popular software applications such as Windows, Word, Visual Basic, etc. By linking to the vendor's URL, the demonstrations could be streamed into the student's computer on demand. The use of third party vendor software was important in getting this particular course online in record time. If the faculty member had been required to develop the demonstrations, the course would have been at least six months longer in development.

The problem of simulating classroom interaction was addressed with the use of threaded discussion groups, where one question or answer to an e-mail inquiry may prompt other questions and answers from both students and instructor. Threaded discussion groups compare favorably to in-class discussions and may even be superior in that student questions are well thought out before being submitted.

Communication with students should have been simple. E-mail is immediate and reliable. However, complicated messages are sometimes difficult to articulate and to understand using e-mail. It requires someone who is an accomplished writer and technically competent in the subject area. The absence of the human element in communication was a very real detriment to effective instruction, especially when responding to student questions. E-mail communication then was incomplete at best and impossibly frustrating at worst. There were many times when the instructor and the student resorted to using the telephone.

Testing and administrative issues were some of the more difficult problems to resolve. In this course the instructor chose to manage the assessment portion of the course personally rather than depend upon available course management software. Tests and examinations were created and graded by the instructor. Students were notified by email when tests would be available and the constraints under which they would be administered-i.e. time, allowable resources, type of test, etc. All tests were timed. Students could take the test at any time during a given calendar period, but once started the test had to be completed in a set amount of time. The completed test also had to be submitted within a set period of time from when it was begun. This part of the course, therefore, is not asynchronous, but rather governed by scheduled testing events.

Other faculty at Northwestern are dealing with the testing issue in several ways. Some require the test be taken and submitted in a specific time frame. Others design their tests so that the student may have access to materials with relaxed time constraints. Still others require the student to take the test in the presence of a proctor such as at a library, school, or college. Some of the faculty rely on course management software that regulates access to the tests which are always online. This software also grades and records test grades automatically. Initially in Sabine's course all test questions were multiple choice and short answer. After evaluating the testing component, it was determined that test questions that required the student to think through a problem related to the learning experiences of the course and respond in an open ended format might be a better assessment technique. The feeling is that a time constrained test using thought questions that consist of content or learning experience dependent questions or issues is a better measure of knowledge and skill attainment than the multiple choice test, which is at a greater risk of being compromised by the less than honest student.

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The Trial Phase:

One quarter prior to going online, the course was evaluated with a group of students in a traditional classroom situation. Students were required to move through the course as if they were at a distant location. As they encountered problems, difficulties, or even minor inconveniences, they alerted the instructional designer, who noted the problem. Many times the students could suggest remedies for the problem, while at other times it was "back to the drawing board." In addition, the instructor met with the class as a whole on a weekly basis for debriefing sessions.

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Evaluation Phase:

The evaluation phase occurred at the conclusion of the pilot class when a decision was made as to whether the course was ready for immediate publication to the web or needed significant revision. This decision rested with the course designer and the academic dean. All courses were subject to a review team with editorial responsibility.

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Implementation:

After one quarter online we have learned some lessons. What follows is a brief list of lessons learned.

1. Any assumption you have about a student's ability to understand hardware and software requirements for an online course are probably overly optimistic.
2. Student motivation is no mean issue. A mature, self-directed, student will be much more successful than will one who needs constant or even intermittent attention.
3. Every online student should have a password that is required to get into the course.
4. Software packages that propose to solve all of your web publishing problems probably won't. There is no way to get around learning html.
5. Intuitiveness is in the eye of the beholder. What is perfectly clear to the developer is perfectly opaque to the student.
6. Excitement will sustain the developer early on, drudgery will rear its ugly head after about three modules have been developed.

7. Student misunderstandings take on geometric proportions and multiply like rabbits when using threaded discussion groups.
8. The developer's learning curve is marked by mistakes. Trial and error are standard fare.
9. The maximum number of students a teacher can effectively deal with the first time a class is offered is probably about 15.
10. Attrition is going to be high, about 40%, unless stringent admission standards are applied.
11. Assuming an online student is relatively computer literate may be a dubious assumption.
12. Time and effort required to manage an online class of 15 students is about the same as that required to manage a traditional 5 credit hour class.
13. Development of an online class will take approximately 6 months if a faculty member is released ½ time.
14. Developing acceptable assessment methods will be one of the major obstacles to be overcome.
15. The course will be ever evolving due to changes the instructor wants to make, Changes in technology, and unforeseen problems that must be addressed.
16. Be wary of tying the online course too closely with a particular text. If the text changes or you decide to change texts, then the entire online course has to be revised. On the other hand the online course should be referenced closely with a text and not redundant.
17. At our institution the copyright belongs to the college. Establish this or some other arrangement early.
18. Good Luck!

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APPENDIX A

Syllabus Format for WEB Based Courses

Northwestern Technical Institute

Course Name and Number

Credit Hours:	Instructor Name
Lecture Hours:	Office Location
Lab Hours:	Office Hours
Telephone:	Email:

Catalog course description:

Various disclaimer's if required:

Entry level requirements if needed:

System Requirements to take full advantage of learning materials:

Prerequisites:

Required text and other reference material including non-text based materials, including url of online bookstore.

Recommended supplemental materials including non text-based materials

Content by week, by topic, by unit, etc. ***(called modules)***

Course competencies ***(called goals)***

Instructional Objectives (including knowledge skills) ***(called objectives)***

Learning Activities including on-line activities, text based activities, and CD-based activities

Course requirements – assignments, term papers, projects, etc. with due dates

Practice examinations – ***(called self-assessment)***

Evaluation procedure ***(called assessment)***

Work ethic requirement

Grading scale

Policies and procedures for course operation

Policy on academic dishonesty

Communication with instructor and bulletin board policies and procedures

Module Format

Web-Based Class

Course Name and Number

Credit Hours:	Instructor Name
Lecture Hours:	Office Location
Lab Hours:	Office Hours
Email	Telephone:

Module Name and or Number

Goal:

Objectives:

Learning Activities:

Readings, Text

Readings, Links

Pronunciation Activities

Written Assignments

Self Assessment:

Assessment:

Communication With Instructor:

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